QUARTERLY

OF

APPLIED MATHEMATICS

EDITED BY

H. W. BODE D. C. DRUCKER I. S. SOKOLNIKOFF G. F. CARRIER U. GRENANDER P. S. SYMONDS

P. J. DAVIS E. T. ONAT J. L. SYNGE

W. F. FREIBERGER, Managing Editor

WITH THE COLLABORATION OF

M. A. BIOT J. P. DEN HARTOG C. FERRARI J. N. GOODIER F. D. MURNAGHAN W. R. SEARS SIR GEOFFREY TAYLOR L. N. BRILLOUIN H. W. EMMONS P. GERMAIN G. E. HAY E. REISSNER SIR RICHARD SOUTHWELL J. J. STOKER

J. M. BURGERS W. FELLER J. A. GOFF P. LE CORBEILLER S. A. SCHELKUNOFF S. P. TIMOSHENKO

MANAGING EDITOR, 1943-1965 W. PRAGER

Printed by the WILLIAM BYRD PRESS, INC. Richmond, Virginia

CONTENTS

| John C. Amazigo: Buckling under axial compression of long cylindrical shells | |
|--|-----|
| with random axisymmetric imperfections | 537 |
| stress-strain laws | 35 |
| G. E. Backus (see J. W. Miles) | |
| S. Bergman: Application of the kernel function for the computation of flows of | |
| compressible fluids | 301 |
| F. T. Boesch: Properties of the distance matrix of a tree | 607 |
| R. C. Boger and G. S. S. Ludford: The nonanalyticity at the surface of a body in | |
| an OHD or MHD stream | 284 |
| R. K. Brown and E. E. Jones: On the torsion of a curvilinearly aeolotropic | |
| cylinder | 273 |
| S. Carmi (see D. D. Joseph) | 00# |
| LL. G. Chambers: Two electromagnetic analogies for a hydrodynamic problem | 265 |
| G. Chertock: Convergence of iterative solutions to integral equations for sound | 000 |
| radiation | 268 |
| in the presence of body forces and arbitrary temperature fields | 49 |
| P. M. Chirlian: Restrictions imposed upon the transient and frequency response | 40 |
| of networks | 417 |
| E. J. Cockayne and Z. A. Melzak: Steiner's problem for set-terminals | 213 |
| R. W. Dickey: Dynamic deformation of axially symmetric elastic membranes | 197 |
| R. W. Dickey: Torsion of the single span suspension bridge | 491 |
| E. H. Dowell: Generalized aerodynamic forces on a flexible cylindrical shell | 343 |
| J. Eisenfeld: Normal mode expansion and stability of Couette flow | 433 |
| T. Z. Fahidy: On the inversion of Laplace transforms by the method of Papoulis | 276 |
| N. D. Fowkes: A singular perturbation method. Part I | 57 |
| N. D. Fowkes: A singular perturbation method. Part II | 71 |
| H. Frank and S. L. Hakimi: Parametric analysis of statistical communication | |
| nets | 249 |
| N. J. Freeman (see L. M. Keer) | |
| G. A. C. Graham: The correspondence principle of linear viscoelasticity theory for | 100 |
| mixed boundary value problems involving time-dependent boundary regions. | 167 |
| James M. Greenberg: Existence of steady waves for a class of nonlinear dissipative | 07 |
| materials | 27 |
| S. L. Hakimi (see H. Frank) M. Hayes and R. J. Knops: On the displacement boundary-value problem of | |
| linear elastodynamics | 291 |
| G. A. Hegemier: On linear ordinary differential equations with exponential | 231 |
| coefficients | 389 |
| G. A. Hegemier: On nonlinear steady-state solutions to moving load problems | 239 |
| J. D. Hellums (see G. J. Hirasaki) | |
| N. Hickerson (see W. R. Spillers) | |
| | |

| G. J. Hirasaki and J. D. Hellums: A general formulation of the boundary con- | |
|---|-----|
| ditions on the vector potential in three-dimensional hydrodynamics | 331 |
| J. M. Holtzman: The use of the contraction mapping theorem with derivatives in | 991 |
| a Banach space | 462 |
| R. R. Huilgol: On the rotation and translation of an incompressible medium in | 402 |
| plane motion | 443 |
| E. E. Jones (see R. K. Brown) | 440 |
| | |
| D. Joseph and S. Carmi: Stability of Poiseuille flow in pipes, annuli and | |
| channels | 575 |
| L. M. Keer and N. J. Freeman: Torsion of a finite elastic cylindrical rod partially | |
| bonded to an elastic half space | 567 |
| A. D. Kerr: An extension of the Kantorovich method | 219 |
| M. S. Klamkin and D. J. Newman: On some inverse problems in dynamics | 281 |
| M. S. Klamkin and D. J. Newman: On some inverse problems in potential | |
| theory | 277 |
| R. J. Knops (see M. Hayes) | |
| H. Kurss: Dispersion relations, stored energy and group velocity | 373 |
| T. J. Lardner: Exact solution of the equations for shallow shells of revolution | 445 |
| M. E. Levenson: A numerical determination of ultra-subharmonic response for the | |
| Duffing equation | 456 |
| H. C. Levey and J. J. Mahony: Series representations of Fourier integrals | 101 |
| C. Y. Lo: A bound for entire harmonic functions of three variables | 451 |
| G. S. S. Ludford (see R. C. Boger) | |
| J. J. Mahony (see H. C. Levey) | |
| A. K. Mal: Diffraction of elastic waves by a penny-shaped crack | 231 |
| John J. McCoy: An application of the method of moments to stochastic equations. | 521 |
| Z. A. Melzak (see E. J. Cockayne) | 021 |
| J. W. Miles and G. E. Backus: A note on the potential flow past a lemniscate and | |
| a general method of Milne-Thomson | 441 |
| L. M. Milne-Thomson: Potential flow when a uniform stream of inviscid liquid is | 111 |
| disturbed by an oval of Cassini | 605 |
| T. J. Moran (see P. R. Sethna) | 000 |
| R. C. Morgan: Uniqueness theorem for a multi-mode surface wave diffraction | |
| problem | 601 |
| J. A. Morrison: Motion in the neighborhood of a stationary point | 601 |
| | 111 |
| S. Nemat-Nasser: On local stability of a finitely deformed solid subjected to | 110 |
| follower type loads | 119 |
| D. J. Newman (see M. S. Klamkin) | |
| R. E. Nickell and J. L. Sackman: Variational principles for linear coupled | |
| thermoelasticity | 11 |
| N. Y. Ölcer: A general class of unsteady heat flow problems | 355 |
| E. Ott and J. Shmoys: Transition radiation and the Čerenkov effect | 187 |
| D. R. Owen and W. O. Williams: On the concept of rate-independence | 321 |
| C. H. Pak and R. M. Rosenberg: On the existence of normal mode vibrations in | |
| non-linear systems | 403 |
| A. C. Pipkin: Controllable viscometric flows | 87 |
| A. K. Rigler: The construction of difference approximations from a 'sensitized | |
| functional' | 288 |
| P. W. Perceber (as C. H. Pele) | |

Daniel Land

| J. L. Sackman (see R. E. Nickell) | |
|---|-----|
| R. Seebass (see J. Y. T. Tang) | |
| P. R. Sethna and T. J. Moran: Some nonlocal results for weakly nonlinear | |
| dynamical systems | 175 |
| J. Shmoys (see E. Ott) | |
| W. R. Spillers and N. Hickerson: Optimal elimination for sparse symmetric | |
| systems as a graph problem | 425 |
| M. Stippes: Completeness of the Papkovich potentials | 477 |
| J. L. Synge: Jets of radiation | 153 |
| J. Y. T. Tang and R. Seebass: Finite-magnetic-Reynolds-number effects in | |
| magnetogasdynamic flows | 131 |
| J. Y. T. Tang and R. Seebass: The effect of tensor conductivity on continuum | |
| magnetogasdynamic flows | 311 |
| A. Verruijt: The completeness of Biot's solution of the coupled thermoelastic | |
| problem | 481 |
| Y. D. Wadhwa and T. W. Wineinger: Linear time dependent fluid flow problems. | 1 |
| A. G. D. Watson: Limits on possible solutions of van der Pol's equation | 611 |
| W. O. Williams (see D. R. Owen) | |
| L. B. Willner: On the distance between polytopes | 207 |
| T. W. Wineinger (see Y. D. Wadhwa) | |
| T A Zaker Dynamic thermal shock in hollow spheres | 503 |

BOOK REVIEWS

VOLUME XXVI

1968

| H. A. Antosiewicz: Review of Constructive real analysis, by A. A. Goldstein | 471 |
|--|-----|
| B. W. Arden: Review of Computation: finite and infinite machines, by M. L. | |
| Minsky | 297 |
| M. J. Beckmann: Review of Essays on the theory of optimal economic growth, | |
| edited by Karl Shell | 619 |
| M. J. Beckmann: Review of Stochastically dependent equations: an introductory text | |
| for econometricians, by P. R. Fisk | 620 |
| Adi Ben-Israel: Review of Éléments de théorie des matrices carrées et rectangles en | |
| analyse numérique, by A. Korganoff and M. Pavel-Parvu | 296 |
| R. H. Dalitz: Review of The eightfold way, by M. Gell-Mann and Y. Ne'eman | 467 |
| A. Erdélyi: Review of Praktische Funktionenlehre, by F. Tolke | 468 |
| P. L. Falb: Review of Optimal and self-optimizing control, by R. Oldenburger | 298 |
| Ky Fan: Review of Topological spaces, by E. Cech | 475 |
| W. H. Fleming: Review of Calculus of variations and optimal control theory, by | |
| M. R. Hestenes | 474 |
| W. H. Fleming: Review of Stochastic stability and control, by H. J. Kushner | 295 |
| H. Frank: Review of Theory of linear active networks, by E. S. Kuh and R. A. | |
| Rohrer | 297 |
| David Gilbarg: Review of The theory of jets in an ideal fluid, by M. I. Gurevich | 147 |
| Ulf Grenander: Review of Multichannel time series analysis with digital computer | |
| programs, by Enders A. Robinson | 613 |
| Jack K. Hale: Review of Nonlinear autonomous oscillation, by M. Urabe | 615 |
| E. J. Hannan: Review of Spectral analysis of time series, by B. Harris | 299 |
| R. Hide: Review of An introduction to magnetohydrodynamics, by P. H. Roberts | 300 |
| J. L. Hodges, Jr.: Review of Research papers in statistics, by F. N. David | 295 |
| J. F. C. Kingman: Review of Combinatorial methods in the theory of stochastic | |
| processes, by L. Takacs | 471 |
| W. T. Koiter: Review of Introduction to the mechanics of a continuous medium, by | |
| L. I. Sedov | 148 |
| Heinz O. Kreiss: Review of Mathematical reasoning in economics and management | |
| science, by John C. G. Boot | 619 |
| H. Kushner: Review of Statistical decision theory in adaptive control processes, by Y. | |
| Sarawagi, Y. Sunahara and T. Nakamizo | 618 |
| M. R. Leadbetter: Review of A first course in stochastic processes, by Samuel | |
| Karlin | 151 |
| John S. Lew: Review of Group theory and its physical applications, by L. M. | |
| Falicov | 150 |
| M. J. Lighthill: Review of Applications of distributions in mathematical physics, | |
| by E. M. DeJager | 148 |
| E. R. Lorch: Review of Ordered topological vector spaces, by Anthony L. Peressini | 617 |
| Eugene Lukacs: Review of Wahrscheinlichkeits-Theorie, by Hans Richter | 152 |
| R. McNaughton: Review of Automata theory, by E. R. Caianiello | 475 |
| | |

| A. M. Ostrowski: Review of Interval analysis, by R. E. Moore | 473 |
|--|-----|
| A. M. Ostrowski: Review of Lambda matrices and vibrating systems, by P. | |
| Lancaster | 472 |
| A. M. Ostrowski: Review of Modern nonlinear equations, by T. L. Saaty | 473 |
| P. R. Paslay: Review of Dynamic stability of structures, edited by George | |
| Herrmann | 147 |
| W. Prager: Review of Mechanik der festen Körper, by H. Parkus | 299 |
| Robert A. Schwartz: Review of Time and space, weight and inertia-a chronogeo- | |
| metrical introduction to Einstein's theory, by A. D. Fokker | 149 |
| D. G. Schweikert: Review of The theory of splines and their applications, by J. H. | |
| Ahlberg, E. N. Nilson and J. L. Walsh | 470 |
| Herbert A. Simon: Review of Mathematics in the social sciences, and other essays, | |
| by Richard Stone | 150 |
| L. Sirovich: Review of Physics of shock waves and high-temperature hydrodynamic | |
| phenomena, by Y. B. Zel'dovich and Y. Raizer | 470 |
| R. C. T. Smith: Review of Spektraldarstellung linearer Transformationen des | |
| Hilbertschen Raumes, by Béla SzNagy | 614 |
| F. Smithies: Review of Integral equations and their applications, by W. Pogorzelski. | 469 |
| F. Spitzer: Review of Stochastic processes—basic theory and its applications, by | - |
| N. U. Prabhu | 152 |
| L. Weiss: Review of Functional analysis and optimization, by E. R. Caianiello | 298 |
| E. P. Wigner: Review of Random matrices and the statistical theory of energy levels, | |
| by M. L. Mehta | 613 |
| E. J. Woods: Review of Commutation properties of Hilbert space operators and | 010 |
| related topics, by C. R. Putnam | 296 |
| A. M. Yaglom: Review of Stationary and related stochastic processes—sample | 200 |
| function properties and their applications, by Harold Cramér and M. R. | |
| Leadbetter | 615 |
| Leadbetter | 019 |



